Table 5. Percentage of African American women of reproductive age who reported being current cigarette smokers,* overall and by education, National Health Interview Surveys, United States, 1978–1995 aggregate data

Characteristic	1978–1980†		1983–1985†		1987–1988†		1990–1991†		1992–1993†		1994–1995†	
	%	±CI‡	%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
Total	35.4	2.3	34.1	2.0	30.6	1.8	25.4	1.6	23.8	2.1	23.4	2.4
Education§												
Less than high school	41.1	5.6	52.4	5.7	48.2	4.2	44.5	4.7	45.7	6.9	46.3	7.8
High school	36.3	4.0	36.8	3.8	34.5	3.0	31.6	3.0	30.0	3.8	28.4	4.3
Some college	37.1	6.8	32.3	5.0	30.6	3.8	26.4	3.4	26.2	4.7	26.1	5.6
College	37.0	10.2	21.8	6.5	20.0	4.3	17.3	4.3	13.1	5.0	10.8	4.9

*Excludes African American women who reported they were of Hispanic origin. For 1978–1991, current cigarette smokers include women aged 18–44 years who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked. For 1992–1995, current smokers include women aged 18–44 years who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked every day or on some days.

†1978, 1979, and 1980 data were combined; 1983 and 1985 data were combined; 1987 and 1988 data were combined; 1990 and 1991 data were combined; 1992 and 1993 data were combined; and 1994 and 1995 data were combined.

‡95% confidence interval.

§Includes persons aged 25 years and older.

Source: National Center for Health Statistics, public use data tapes, 1978–1995.

old—a finding that is consistent with previously published data (USDHHS 1994).

Data from the 1988 NMIHS indicate that 27 percent of African American mothers sampled reported smoking cigarettes in the 12 months before delivery (Sugarman et al. 1994). The National Pregnancy and Health Survey, conducted between October 1992 and August 1993 and sponsored by the National Institute on Drug Abuse (NIDA), provides nationally representative data on the prevalence of prenatal drug use among females of reproductive age (15–44 years). According to the National Pregnancy and Health Survey, 19.8 percent of African American women reported using cigarettes during their pregnancies (NIDA 1994). In the 1985 and 1990 NHISs, questions related to smoking were asked of women aged 18–44 years who had given birth within the past five years. In 1985, 27.5 percent of African American women smoked during the 12 months before the birth and 22.6 percent smoked after learning of their pregnancy; in 1990, 19 percent smoked during the year before the birth and 14.1 percent after learning of their pregnancy (Floyd et al. 1993).

Young People

Cigarette Smoking

In the 1970s and 1980s, the prevalence of cigarette smoking declined among both male and female African American high school seniors, according to data from the MTF surveys (Figure 2) (Bachman et al. 1991b). The prevalence of daily cigarette smoking, based on two-year rolling averages (percentages calculated by averaging the data for the specified year and the previous year to increase racial subgroup sample sizes and stabilize estimates), among African American high school seniors was 24.9 percent in 1977, 4.1 percent in 1993, and 7.0 percent in 1996 (Figure 3) (Johnston et al. 1996; Institute for Social Research, University of Michigan, unpublished data from the 1996 MTF surveys). Between 1974 and 1991, significant declines in the prevalence of cigarette smoking also were observed among African American adolescents participating in the National Household Surveys on Drug Abuse (NHSDAs) as well as among African Americans 18 and 19 years of age who participated in the NHISs (Nelson et al. 1995).

Table 6. Percentage of live-born infants' mothers who reported smoking during pregnancy, by year and race/ethnicity, U.S. final natality statistics, 1989–1995

	1989	1990	1991	1992	1993	1994	1995
Race of mother*							
African American	17.1	15.9	14.6	13.8	12.7	11.4	10.6
American Indian and Alaska Native	23.0	22.4	22.6	22.5	21.6	21.0	20.9
Asian American and Pacific Islander†	5.7	5.5	5.2	4.8	4.3	3.6	3.4
Chinese	2.7	2.0	1.9	1.7	1.1	0.9	0.8
Filipino	5.1	5.3	5.3	4.8	4.3	3.7	3.4
Hawaiian and part Hawaiian	19.3	21.0	19.4	18.5	17.2	16.0	15.9
Japanese	8.2	8.0	7.5	6.6	6.7	5.4	5.2
Other Asian American or Pacific Islander	4.2	3.8	3.8	3.6	3.2	2.9	2.9
White	20.4	19.4	18.8	17.9	16.8	15.6	15.0
Hispanic origin of mother‡							
Hispanic origin	8.0	6.7	6.3	5.8	5.0	4.6	4.3
Cuban	6.9	6.4	6.2	5.9	5.0	4.8	4.1
Central and South American	3.6	3.0	2.8	2.6	2.3	1.8	1.8
Mexican American	6.3	5.3	4.8	4.3	3.7	3.4	3.1
Other and unknown Hispanic	12.1	10.8	10.7	10.1	9.3	8.1	8.2
Puerto Rican	14.5	13.6	13.2	12.7	11.2	10.9	10.4
African American, non-Hispanic	17.2	15.9	14.6	13.8	12.7	11.5	10.6
White, non-Hispanic	21.7	21.0	20.5	19.7	18.6	17.7	17.1
Total	19.5	18.4	17.8	16.9	15.8	14.6	13.9

*Includes data for 43 states and the District of Columbia (DC) in 1989, 45 states and DC in 1990, and 46 states and DC in 1991–1995. Excludes data for California, Indiana, New York (but includes New York City), and South Dakota in 1994 and 1995; Oklahoma in 1989–1990; and Louisiana and Nebraska in 1989, which did not require the reporting of mother's tobacco use during pregnancy on the birth certificate. White and African American racial groups include persons of Hispanic and non-Hispanic origin.

†Maternal tobacco use during pregnancy was not reported on the birth certificates in California and New York, which together accounted for 43–66 percent of the births in each Asian subgroup (except Hawaiian) during 1989–1991.

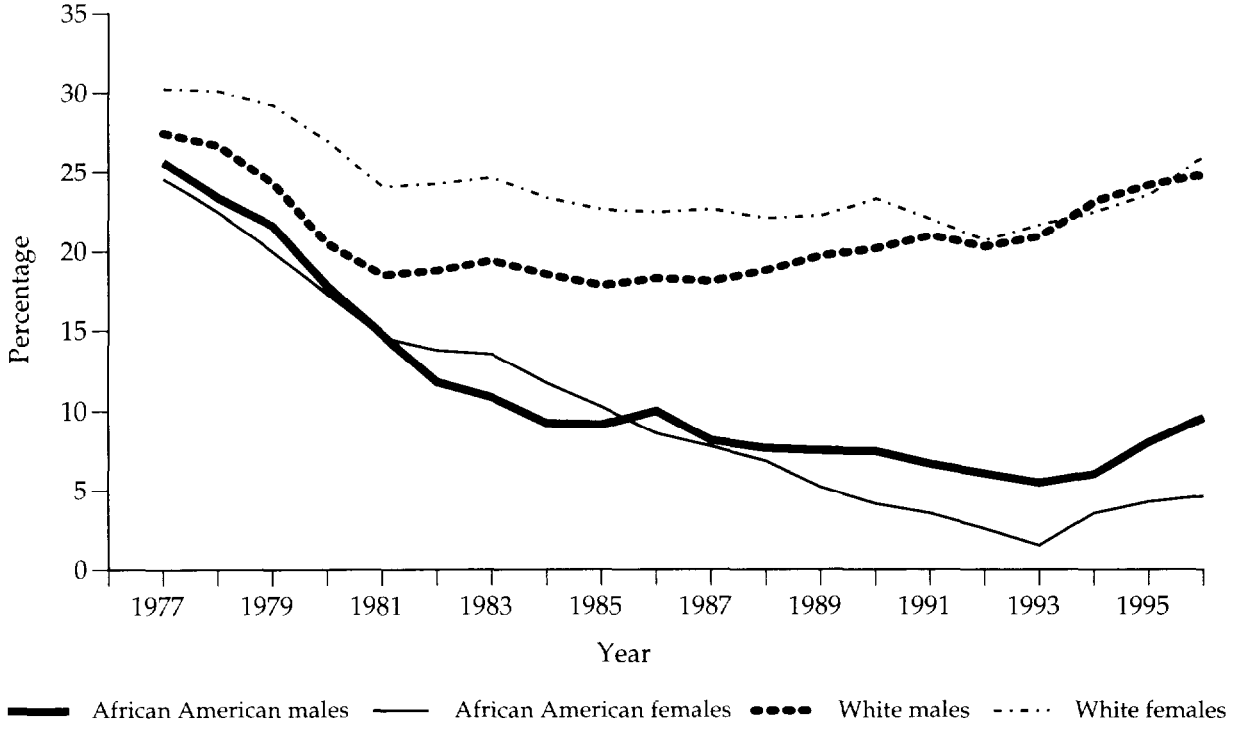
‡Includes data for 42 states and DC in 1989, 44 states and DC in 1990, 45 states and DC in 1991–1992, and 46 states and DC in 1993–1995. Excludes data for California, Indiana, New York (but includes New York City), and South Dakota in 1994 and 1995; Oklahoma in 1989–1990; and Louisiana and Nebraska in 1989, which did not require the reporting of either Hispanic origin of mother or tobacco use during pregnancy on the birth certificate. Persons of Hispanic origin may be of any race.

Sources: National Center for Health Statistics 1996; Ventura et al. 1996, 1997.

The prevalence of cigarette smoking among African American adolescents has been substantially lower than the prevalence among white and Hispanic adolescents (Figures 2 and 3) (Bachman et al. 1991b; USDHHS 1994; CDC 1996; Johnston et al. 1996). Local, more limited surveys have also shown similar differences in cigarette smoking prevalence between African American and white youths (for example, Sheridan et al. 1993; Greenlund et al. 1996).

In addition to the slight increases in the 1990s in smoking prevalence among African American high school seniors (Figures 2 and 3), CDC's Youth Risk Behavior Survey (YRBS) detected an increase in the prevalence of cigarette smoking from 1991 to 1995

Figure 2. Trends in daily smoking* among African American and white high school seniors, by gender, United States, 1977–1996



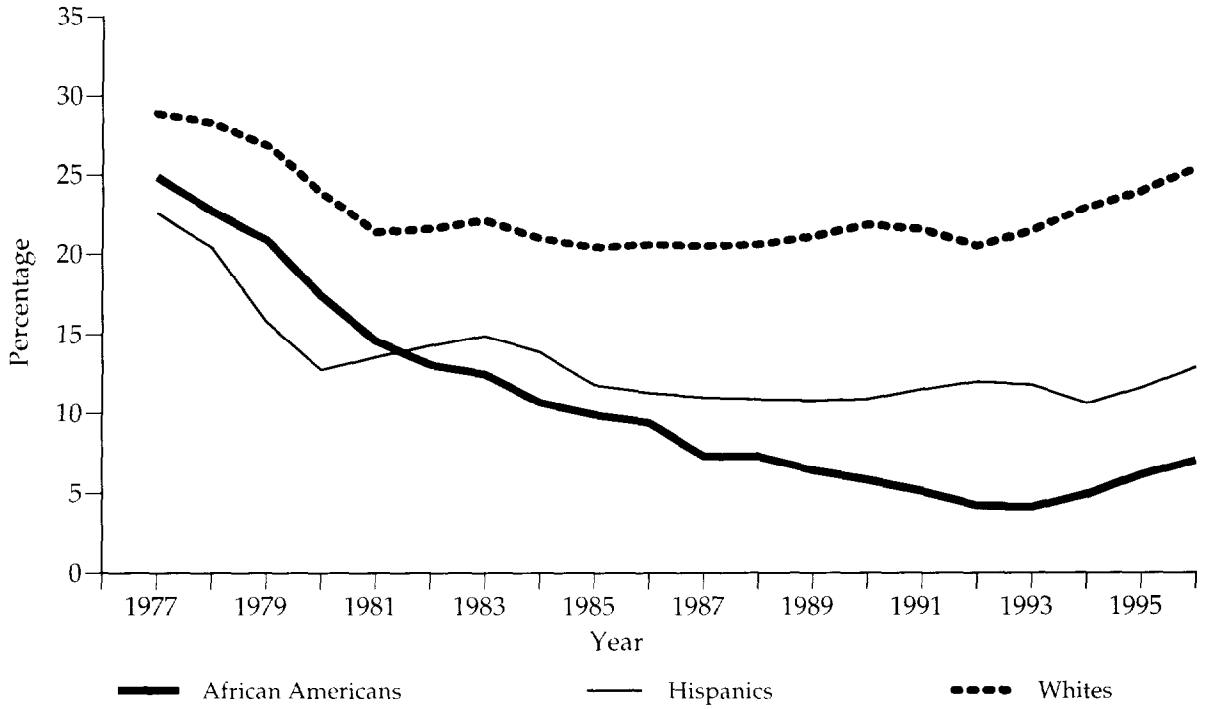
Note: To increase racial subgroup sample sizes and stabilize estimates, the percentages were calculated by averaging the data for the specified year and the previous year.
*Daily smoking is defined as smoking one or more cigarettes per day during the previous 30 days.
Source: Institute for Social Research, University of Michigan, unpublished data from the Monitoring the Future surveys, 1976–1996.

among male African American high school students (CDC 1996). The prevalence of previous-month smoking among African American male high school students increased from 14.1 percent in 1991 to 27.8 percent in 1995. Among female African American high school students, prevalence was 11.3 percent in 1991 and 12.2 percent in 1995 (CDC 1996). Data from the MTF surveys indicate that the prevalence of daily smoking increased more rapidly from 1993 to 1996 for male than for female African American high school seniors (Figure 2) (Institute for Social Research, University of Michigan, unpublished data from the MTF surveys, 1976–1996). Yet even with this increase, the prevalence of smoking among African American high school seniors was still lower than that for members of other racial/ethnic groups during 1990–1994 (Table 7).

The trend of lower smoking prevalences among African American adolescents observed in recent years has continued as these individuals age and become young adults, according to the NHIS data. From 1978 through 1995, the prevalence of current smoking declined more among African Americans aged 20–24 years than among whites of the same ages, regardless of gender (Table 8) or level of formal education (Table 9) (NCHS, public use data tapes, 1978–1995). In addition, among persons 25–29 and 30–34 years of age, recent declines in smoking prevalence were greater for African Americans than for whites (Table 8) (Figure 4).

In addition to the recent increases seen among African American high school seniors (Figures 2 and 3), the MTF surveys indicate that previous-month smoking prevalence (based on two-year rolling averages) among eighth-grade African American students

Figure 3. Trends in daily smoking* among African American, Hispanic, and white high school seniors, United States, 1977–1996



Note: To increase racial subgroup sample sizes and stabilize estimates, the percentages were calculated by averaging the data for the specified year and the previous year.
*Daily smoking is defined as smoking one or more cigarettes per day during the previous 30 days.
Sources: Johnston et al. 1996; Institute for Social Research, University of Michigan, unpublished data, 1996.

increased from 5.3 percent in 1992 to 9.6 percent in 1996; among ninth-grade African American students, the prevalence increased from 6.6 percent in 1992 to 12.2 percent in 1996 (Johnston et al. 1996; Institute for Social Research, University of Michigan, unpublished data from the 1996 MTF surveys). These recent patterns among African American adolescents suggest that the progress seen among young adults (Table 8) may reverse itself in the future.

Possible biases. The accuracy of the finding that African American youths have been smoking less than white youths has been called into question. For example, trends observed may have resulted from artifactual phenomena such as differential dropout rates or misclassification bias.

Differential dropout rates. Some investigators have hypothesized that the data may be biased for two reasons. First, the data from school-based surveys exclude youths who are school dropouts. Second, because African American youths have a higher dropout rate than do white youths, the smoking prevalence rates may be more biased for African American youths than for white youths. However, this bias should only be apparent in the school surveys. The proportion of young adults (aged 25–29 years) who have completed at least four years of high school increased from 74 percent in 1976 to 83 percent in 1993 for African Americans; for whites, this proportion was 86 percent in 1976 and 87 percent in 1993 (Kominski and Adams 1994). The increasing rate of completing at least four years of high school among African American young adults, relative to whites, is not consistent with the hypothesis that the trend in smoking prevalence observed in school surveys is related to the dropout rate. Furthermore, in household surveys, the trends in smoking prevalence among African Americans have also

Table 7. Trends in the percentage of high school seniors who were previous-month smokers, by race/ethnicity and gender, Monitoring the Future surveys, United States, 1976–1979, 1980–1984, 1985–1989, 1990–1994

	1976–1979	1980–1984	1985–1989	1990–1994
Males				
African American	33.1	19.4	15.6	11.6
American Indian and Alaska Native	50.3	39.6	36.8	41.1
Asian American and Pacific Islander	20.7	21.5	16.8	20.6
Hispanic	30.3	23.8	23.3	28.5
White	35.0	27.5	29.8	33.4
Females				
African American	33.6	22.8	13.3	8.6
American Indian and Alaska Native	55.3	50.0	43.6	39.4
Asian American and Pacific Islander	24.4	16.0	14.3	13.8
Hispanic	31.4	25.1	20.6	19.2
White	39.1	34.2	34.0	33.1

Note: The Institute for Social Research usually reports the N (weighted), which is approximately equal to the sample size. Cases are weighted to account for differential probability of selection and then normalized to average 1.0. For males, the ranges of the N (weighted) for each of the cells in this table are 2,916–4,393 for African Americans, 342–587 for American Indians and Alaska Natives, 242–1,166 for Asian Americans and Pacific Islanders, 893–2,808 for Hispanics, and 24,931–31,954 for whites. For females, the ranges of the N (weighted) for each of the cells in this table are 3,982–5,716 for African Americans, 299–586 for American Indians and Alaska Natives, 223–1,143 for Asian Americans and Pacific Islanders, 940–2,723 for Hispanics, and 25,627–31,933 for whites.
Sources: Bachman et al. 1991a; Institute for Social Research, University of Michigan, unpublished data.

become lower than those for whites (Nelson et al. 1995). Finally, data from the 1989 TAPS have shown that African American youths—both active students and dropouts—are significantly less likely than white youths to have smoked recently. Among students 17 and 18 years of age who remained in school, African Americans (5.7 percent) were less likely than whites (19.3 percent) to have smoked in the previous week (CDC 1991b). Among youths who left school, 17.1 percent of African Americans and 46.1 percent of whites had smoked in the previous week. Similarly, 1991 NHSDA data show that among youths 16–18 years old, 7.2 percent of African American high school seniors and 27.7 percent of white high school seniors had smoked in the previous month, compared with 30.4 percent of African American dropouts and 72.2 percent of white dropouts (Kopstein and Roth 1993). Thus, dropout status does not account for the lower smoking prevalence among African American youths.

Differential misclassification bias. Other researchers have proposed that in recent years, African American youths may have been more likely to misclassify their smoking status when questioned. No trend data are available on differences in misclassification of smoking status over time between African Americans and whites. However, data from the 1976–1992 MTF surveys have been used to compare the trends of high school seniors' reports of smoking by their friends—a measure for which they would have little reason to underreport (Johnston et al. 1993b; USDHHS 1994). Until 1993, the percentage of African American seniors who reported that most or all of their friends smoke declined substantially more than that of white seniors. Since 1993, an increase in this measure has been observed for African Americans, but not for whites (Bachman et al. 1980a, 1980b, 1981, 1984, 1985, 1987, 1991a, 1993a, 1993b, 1997; Johnston et al. 1980a, 1980b, 1982, 1984, 1986, 1991, 1992, 1993a, 1995b, 1997). This observation may be limited by the fact that African American and white youths have friends from several ethnic groups.

Bauman and Ennett (1994) recently assessed misclassification bias in a household survey of adolescents 12–14 years of age, using carbon monoxide and salivary cotinine (a nicotine metabolite) as biological

Table 8. Percentage of African Americans and whites 20–34 years of age who reported being current cigarette smokers,* by age group and gender, National Health Interview Surveys, United States, 1978–1995 aggregate data

Characteristic	1978–1980†		1983–1985†		1987–1988†		1990–1991†		1992–1993†		1994–1995†	
	%	±CI‡	%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
Aged 20–24 years												
African Americans												
Total	37.3	4.3	32.0	3.6	24.7	2.9	16.8	2.7	15.0	4.1	13.7	3.9
Men	44.8	6.8	31.6	6.2	25.4	5.0	21.3	4.8	20.3	7.6	19.6	7.3
Women	31.8	4.4	32.3	3.8	24.1	3.3	13.1	2.5	10.7	3.4	8.9	3.3
Whites												
Total	35.6	1.6	35.5	1.6	30.4	1.5	28.4	1.5	32.0	2.3	33.3	2.5
Men	37.2	2.2	34.1	2.3	30.5	2.3	28.0	2.3	32.2	3.1	34.9	3.6
Women	34.0	2.0	36.8	2.2	30.3	1.8	28.8	2.0	32.4	3.1	31.6	3.3
Aged 25–29 years												
African Americans												
Total	41.5	3.9	39.0	3.9	38.3	3.4	30.5	3.3	21.7	3.6	21.0	4.3
Men	47.6	4.9	41.6	6.2	43.1	5.5	35.9	5.7	21.3	5.9	22.6	7.6
Women	36.5	5.8	36.8	4.6	34.3	3.7	26.1	3.6	22.1	4.5	19.6	5.3
Whites												
Total	38.4	1.4	36.2	1.5	34.7	1.3	30.8	1.3	31.2	1.9	32.2	2.1
Men	42.3	2.0	38.3	2.2	34.5	1.8	31.2	1.9	31.9	2.7	32.6	3.1
Women	34.7	2.0	34.1	1.9	35.0	1.7	30.5	1.7	30.6	2.5	31.9	2.8
Aged 30–34 years												
African Americans												
Total	43.0	5.1	40.8	4.5	41.0	3.1	36.5	3.0	34.2	4.2	31.9	4.3
Men	50.2	8.2	45.5	7.1	43.6	5.1	38.9	4.8	38.3	6.9	31.2	6.8
Women	37.5	6.0	37.1	4.6	38.9	3.6	34.5	3.6	30.8	4.9	32.5	5.7
Whites												
Total	38.6	1.8	34.4	1.5	33.1	1.3	31.1	1.2	32.9	1.7	30.7	1.8
Men	43.1	2.5	37.3	2.2	35.9	1.8	32.7	1.7	33.1	2.4	31.3	2.6
Women	34.2	2.3	31.5	1.9	30.4	1.6	29.6	1.5	32.7	2.2	30.2	2.6

*For 1978–1991, current cigarette smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked. For 1992–1995, current smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked every day or on some days.

†1978, 1979, and 1980 data were combined; 1983 and 1985 data were combined; 1987 and 1988 data were combined; 1990 and 1991 data were combined; 1992 and 1993 data were combined; and 1994 and 1995 data were combined.

‡95% confidence interval.

Source: National Center for Health Statistics, public use data tapes, 1978–1995.

markers for tobacco use. Among adolescents who reported that they did not smoke, African Americans were more likely than whites to test positive for carbon monoxide and for cotinine. Overall, however, white adolescents were three times more likely than African American adolescents to test positive for carbon monoxide, suggesting that whites in this study were substantially more likely to smoke, regardless of

Table 9. Percentage of African Americans and whites 20–24 years of age who reported being current cigarette smokers,* by education and gender, National Health Interview Surveys, United States, 1978–1995 aggregate data

	1978–1980†		1983–1985†		1987–1988†		1990–1991†		1992–1993†		1994–1995†	
Characteristic	%	±CI‡	%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
≥12 years' education												
African Americans												
Total	41.9	5.2	38.6	4.5	30.4	3.7	22.8	3.9	18.5	5.4	16.7	5.4
Men	49.1	7.9	38.2	7.7	29.6	6.3	28.9	6.9	21.9	9.4	22.2	10.1
Women	35.9	6.3	38.9	4.9	31.0	4.5	17.8	3.5	15.2	5.1	12.5	5.0
Whites												
Total	45.2	1.8	48.3	2.3	44.2	2.1	40.5	2.4	46.9	3.2	45.4	4.2
Men	47.8	2.8	47.8	3.5	46.2	3.2	40.5	3.4	47.5	4.8	47.1	5.8
Women	42.7	2.6	48.7	2.9	42.3	2.8	40.5	3.1	46.4	4.5	43.6	5.6
≥13 years' education												
African Americans												
Total	26.4	6.4	17.3	4.4	12.4	3.7	7.2	2.9	9.0	5.3	9.3	5.6
Men	32.0	11.3	15.6	7.9	13.3	7.0	9.2	5.3	16.6	12.4	15.9	10.6
Women	23.5	6.7	18.5	6.6	11.9	4.0	5.5	3.0	4.6	4.0	3.1	3.0
Whites												
Total	21.6	2.0	18.2	1.8	15.4	1.5	16.0	1.5	19.0	2.6	23.6	2.8
Men	22.0	2.5	15.8	2.4	14.0	2.0	14.5	2.4	17.6	3.5	24.6	4.2
Women	21.2	2.5	20.5	2.6	16.7	2.1	17.3	2.1	20.3	3.5	22.7	3.8

*For 1978–1991, current cigarette smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked. For 1992–1995, current smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked every day or on some days.

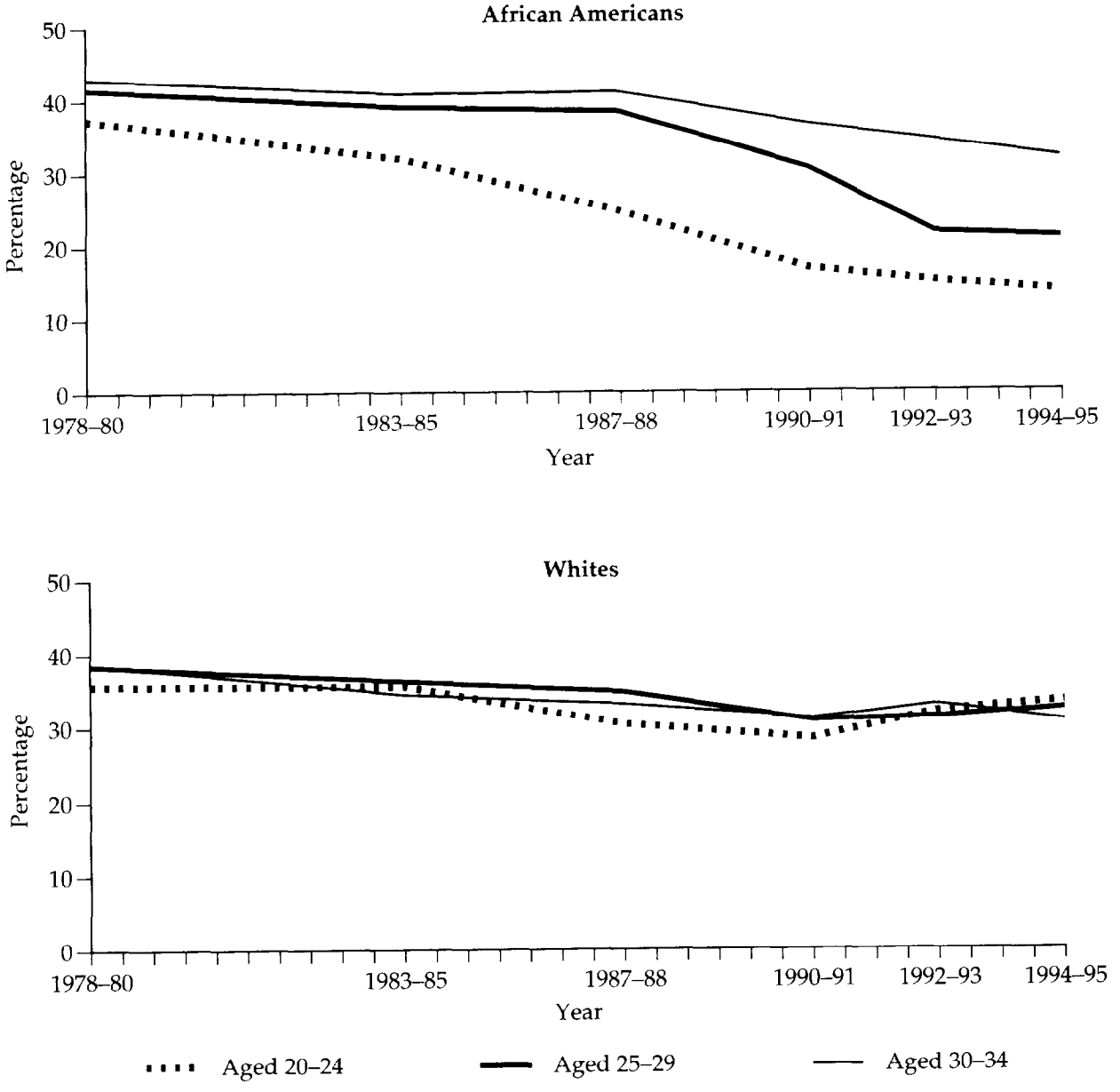
†1978, 1979, and 1980 data were combined; 1983 and 1985 data were combined; 1987 and 1988 data were combined; 1990 and 1991 data were combined; 1992 and 1993 data were combined; and 1994 and 1995 data were combined.

‡95% confidence interval.

Source: National Center for Health Statistics, public use data tapes, 1978–1995.

differential misclassification. In a study of young adults 18–30 years old, Wagenknecht and colleagues (1992) also found differential misclassification, with African Americans (5.7 percent) more likely than whites (2.8 percent) to misclassify themselves as nonsmokers. However, these researchers suggested that their results may have been influenced by differential exposure to environmental tobacco smoke and by differences in nicotine metabolism. Using a sample of seventh- through tenth-grade New York State public school students, Wills and Cleary (1997) compared self-reports of cigarette smoking with measured carbon monoxide from expired air. The investigators found that the sensitivity for self-reports was slightly lower for African Americans than for whites, but the magnitude of the effect was small. When self-reported smoking rates were adjusted for carbon monoxide values, at every grade level African American students had significantly lower smoking prevalences than whites. Although the phenomenon of differential misclassification may need further investigation, no evidence indicates that misclassification bias explains the

Figure 4. Trends in smoking* among African Americans and whites aged 20–34 years, United States, 1978–1995



*For 1978–1991, current cigarette smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked. For 1992–1995, current smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked every day or on some days.

Source: National Health Interview Surveys, National Center for Health Statistics, public use data tapes, 1978–1995; see Table 8 for corresponding data.

substantial decline in smoking prevalence reported by African American youths.

Possible behavioral, sociodemographic, and attitudinal explanations. Exploring possible interactions between the use of alcohol or other drugs and changes in cigarette smoking among African American and white adolescents may yield important scientific data. Understanding the trends of smoking behavior in the context of factors such as the age when youths start smoking, background and lifestyle factors, and attitudes about smoking may help program developers design better smoking prevention and control interventions for these and other population subgroups.

Differential use of other drugs. MTF data were analyzed to explore possible interactions between the use of alcohol or other drugs and changes in cigarette smoking among African American and white adolescents (Table 10) (Figures 5 and 6) (Institute for Social Research, University of Michigan, public use data tapes, 1976–1994). Between 1976 and 1994, the percentage of African American adolescents who were abstinent from (i.e., did not use in the previous month) both cigarettes and other substances (Table 10) was higher than for whites and tended to increase more rapidly for African Americans than for whites in every category of drug use. For example, 41.7 percent of African American high school seniors surveyed in 1976–1979 were abstinent from cigarettes and alcohol, compared with 64.1 percent in 1990–1994. Among white seniors, 22.4 percent were abstinent from both cigarettes and alcohol in 1976–1979, compared with 37.1 percent in 1990–1994. Concurrent use (i.e., use of both substances in the past month) was lower and tended to decrease more rapidly among African American seniors than among white seniors between 1976 and 1994. In addition, trends in the use of cigarettes, alcohol, and other substances among high school seniors indicate that among both smokers and nonsmokers, African Americans were generally less likely than whites to use substances other than tobacco (Table 10).

Age of smoking initiation. African American smokers initiate smoking at slightly later ages than white smokers, according to the findings of two national studies (Escobedo et al. 1990; CDC 1991c). In addition, data from the 1994–1995 (combined) NHSDAs indicate that among U.S. adults aged 30–39 years who had ever smoked daily, the average ages for first trying a cigarette and for becoming a daily smoker were about one year higher for African American males than for white males and about two years higher for African American females than for white females (Table 11) (USDHHS, Substance Abuse and Mental Health Services Administration, public use data tapes, 1994–1995).

These differences in the age of smoking initiation are not large enough to suggest that the differences in smoking prevalence currently observed among African American and white adolescents will disappear as these populations age (CDC 1991c). The data presented in Table 11 and by Escobedo and colleagues (1990) indicate that although African Americans are more likely than whites to begin smoking in their early 20s, virtually all smokers in both groups have begun by age 25. Furthermore, the prevalence of cigarette smoking has decreased more rapidly for African Americans than for whites among those persons aged 20–24 years, 25–29 years, and 30–34 years (Table 8), suggesting that a birth cohort effect has occurred.

Background and lifestyle factors. Investigations of background and lifestyle factors have not identified characteristics that might account for the greater decline in smoking among African American youths. Wallace and Bachman (1991) analyzed the MTF data and found that the difference was not explained by factors such as parents' education, presence of two parents in the household, location of residence, college plans, academic performance, employment status, religiousness, or political views. To assess the incidence of cigarette smoking among African American and white adolescents, Faulkner and colleagues (1996) analyzed longitudinal data from the 1989–1993 TAPS. The analyses were restricted to 3,531 African Americans and whites aged 11–17 years who reported in 1989 that they had never tried cigarettes. After controlling statistically for variables that were sociodemographic (sex, age, and parental education), environmental (household smoking and number of same-sex friends who smoke), personal (beliefs about the perceived benefits of smoking), and behavioral (intention to smoke, participation in organized physical activity, and academic performance), the study found that African Americans were significantly less likely than whites to have tried cigarette smoking four years later.

Lowry and colleagues (1996) analyzed cross-sectional data on 6,321 adolescents (aged 12–17 years) from the YRBS supplement to the 1992 NHIS. African Americans were significantly less likely than whites to have smoked in the previous 30 days. This analysis controlled statistically for the educational level of the responsible adult, for family income, for the age and sex of the adolescent, and for whether the adolescent was in or out of school.

Furthermore, the major declines in smoking reported for African American high school seniors have occurred regardless of parents' education; the

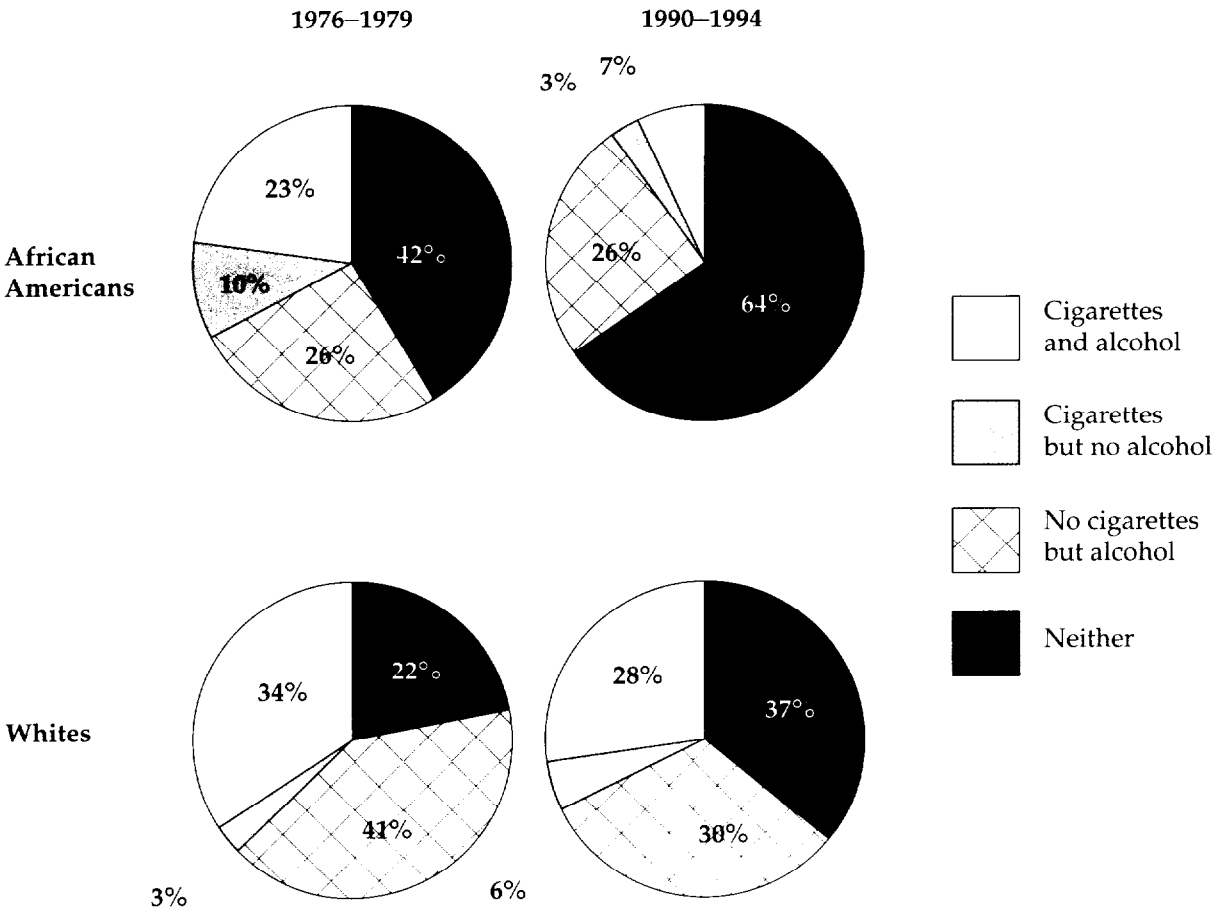
Table 10. Percentage of African American and white high school seniors who reported recently using or not using cigarettes and other selected substances,* Monitoring the Future surveys, United States, 1976–1994 aggregate data

	Cigarette use among African Americans†							
	1976–1979		1980–1984		1985–1989		1990–1994	
Characteristic	Yes	No	Yes	No	Yes	No	Yes	No
Alcohol use								
Yes	22.7	25.9	15.2	31.2	11.0	29.5	7.2	26.2
No	9.7	41.7	5.3	48.4	3.1	56.4	2.6	64.1
Marijuana use								
Yes	17.2	11.9	11.2	14.2	6.4	7.8	3.1	5.8
No	15.0	55.9	9.3	65.3	7.6	78.2	6.6	84.5
Cocaine use								
Yes	1.4	0.6	1.4	1.3	1.0	1.0	0.3	0.2
No	31.7	66.3	19.7	77.6	13.3	84.8	9.6	89.8
Any illicit drug use‡								
Yes	17.6	12.9	11.4	15.2	6.6	9.3	3.3	6.8
No	14.0	55.5	8.8	64.6	7.0	77.1	6.2	83.7

	Cigarette use among whites§							
	1976–1979		1980–1984		1985–1989		1990–1994	
Characteristic	Yes	No	Yes	No	Yes	No	Yes	No
Alcohol use								
Yes	33.7	40.5	28.2	46.0	28.6	40.9	27.5	29.7
No	3.3	22.4	2.7	23.1	3.6	26.8	5.7	37.1
Marijuana use								
Yes	22.4	13.7	16.9	12.8	14.4	8.1	11.8	4.4
No	14.3	49.6	13.8	56.5	17.5	60.0	21.3	62.5
Cocaine use								
Yes	2.6	1.1	3.5	2.0	3.4	1.4	1.2	0.2
No	34.3	62.0	27.3	67.2	28.5	66.6	31.9	66.7
Any illicit drug use‡								
Yes	23.3	14.8	18.9	15.5	16.1	10.0	13.3	5.9
No	13.3	48.6	11.7	53.9	15.7	58.3	19.6	61.2

*Refers to use of these substances in the last 30 days.
†Entries are percentages of the entire African American high school senior population.
‡Any illicit drug use includes any use of marijuana, hallucinogens, cocaine, or heroin or any use of other opiates, stimulants, barbiturates, methaqualone, or tranquilizers not under a physician's orders. Methaqualone is excluded from the definition of illicit drugs for the 1990–1994 survey data.
§Entries are percentages of the entire white high school senior population.
Source: Survey Research Center, Institute for Social Research, University of Michigan, public use data tapes, 1976–1994.

Figure 5. Use of cigarettes and alcohol* among African American and white high school seniors, United States, 1976–1979 and 1990–1994



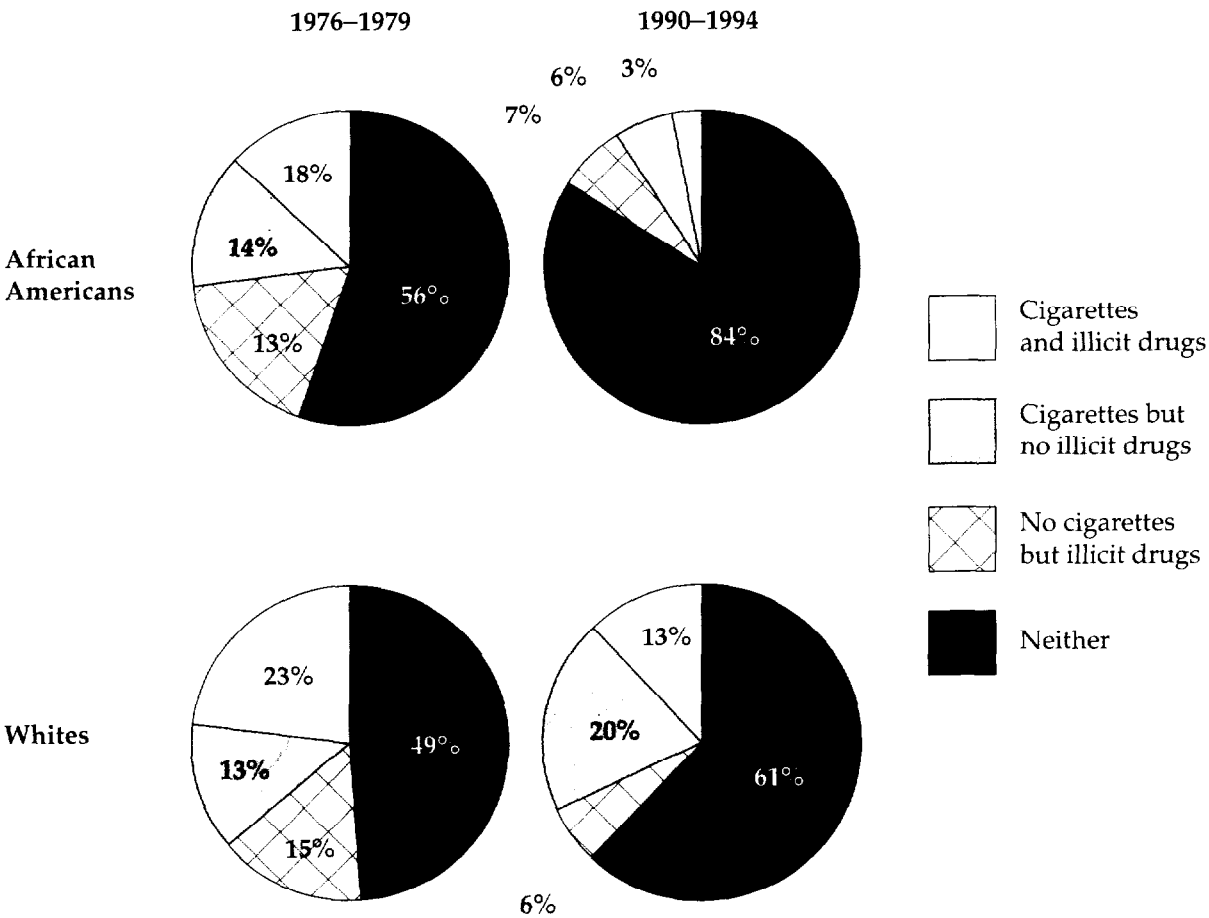
*In the previous month.
Source: Survey Research Center, Institute for Social Research, University of Michigan, public use data tapes, 1976–1994; see Table 10 for corresponding data.

respondent's personal income; school performance; the importance of religion to the respondent; geographic region of residence; and, except for those who were raised on a farm, the locale in which the respondent grew up (Table 12) (Institute for Social Research, University of Michigan, public use data tapes, 1976–1994).

Attitudes about smoking. One possible explanation is that the attractiveness (or *functional value*) of cigarette smoking has decreased more rapidly among African American high school seniors than among white seniors. For example, African American seniors have, over time, become increasingly more likely than white seniors to acknowledge the health risks of cigarette smoking, to claim that smoking is a dirty habit, and to claim that they prefer to date nonsmokers. From 1976 through 1989, African Americans were more likely than whites to disagree with the statement, "I personally don't mind being around people who are smoking" (USDHHS 1994).

African American youths also have been less likely than white youths to believe that cigarette smoking helps control weight. In anonymous surveys of 659 students (with an average age of 16 years) from two racially integrated high schools in the area

Figure 6. Use of cigarettes and illicit drugs* among African American and white high school seniors, United States, 1976–1979 and 1990–1994



*In the previous month.
Source: Survey Research Center, Institute for Social Research, University of Michigan, public use data tapes, 1976–1994; see Table 10 for corresponding data.

of Memphis, Tennessee, 46 percent of white females, 30 percent of white males, 10 percent of African American females, and 14 percent of African American males endorsed the statement, "Smoking cigarettes can help you control your weight/appetite" (Camp et al. 1993). When respondents who smoked at least once a week were asked whether they had smoked to control their weight, 61 percent of the white girls and 16 percent of the white boys said that they had smoked to control their weight, whereas none of the African American smokers reported that they smoked to control their weight. Further research is needed to delineate the role of weight control concerns in patterns of cigarette smoking initiation among adolescents of ethnic groups. One recent study suggests that African American adolescent females prefer a significantly heavier ideal body size than white adolescent females (Parnell et al. 1996), a finding consistent with the notion that the potential weight-controlling effects of cigarettes have less functional utility among young African American females than among white females.

A previous Surgeon General's report indicated that parental concern about whether an adolescent smoked appeared to decrease the risk of that

Table 11. Cumulative percentages of recalled age at which a respondent first tried a cigarette and began smoking daily, among African American, Hispanic, and white men and women aged 30–39, National Household Surveys on Drug Abuse, United States, 1994–1995

	All men*					
	First tried a cigarette			Began smoking daily		
Age (years)	African American	Hispanic	White	African American	Hispanic	White
<12	7.0	9.2	14.9	1.4	1.4	1.3
<14	17.1	20.6	32.2	3.7	4.6	4.6
<16	34.8	39.0	51.0	10.9	11.2	11.8
<18	55.1	54.7	68.7	20.3	19.6	26.4
<19	59.9	62.7	74.0	25.5	26.3	34.3
<20	64.6	65.5	76.1	28.6	28.4	38.5
<25	71.5	72.9	80.9	40.5	37.2	47.4
<30	74.3	76.4	81.7	44.6	42.5	48.8
≤39	75.1	76.7	82.5	45.1	43.4	49.9
Mean age	NA	NA	NA	NA	NA	NA
	All women†					
	First tried a cigarette			Began smoking daily		
Age (years)	African American	Hispanic	White	African American	Hispanic	White
<12	4.6	3.5	7.8	0.6	0.2	0.8
<14	13.3	11.3	27.7	2.5	2.0	5.3
<16	25.7	22.5	49.4	5.9	5.6	15.8
<18	43.9	33.9	67.5	15.9	9.5	30.0
<19	52.3	40.7	73.2	21.7	14.3	38.6
<20	55.8	43.0	75.7	24.0	15.5	41.6
<25	66.1	51.4	80.3	33.7	21.8	49.2
<30	68.3	55.8	81.4	37.0	25.7	51.0
≤39	69.3	57.4	82.0	38.1	26.7	51.4
Mean age	NA	NA	NA	NA	NA	NA

*N = 3,536
†N = 5,143
NA = data not available.

adolescent becoming a cigarette smoker (USDHHS 1994). In a study conducted in Los Angeles and San Diego in 1986, African American parents placed a higher value than white parents on becoming involved in preventing their children from beginning to smoke (Flay et al. 1988; Koepke et al. 1990). Data from two surveys conducted in eight U.S. communities in 1988 and 1989 indicate that African American adults were more likely than white adults to perceive cigarette smoking as a very serious health problem in their community, to favor eliminating vending machines from places where teenagers gather, and to prohibit smoking in their car (Royce et al. 1993).

More recent findings from focus groups conducted at several U.S. sites suggest that African American parents may be more likely than white parents to express clear antismoking messages (McIntosh 1995; Mermelstein et al. 1996). Findings from these focus

Men who had ever smoked daily					
First tried a cigarette			Began smoking daily		
African American	Hispanic	White	African American	Hispanic	White
8.9	13.6	15.7	3.0	3.2	2.7
22.7	29.7	36.7	8.3	10.6	9.2
45.7	55.4	61.0	24.2	25.7	23.7
73.7	74.1	83.9	45.0	45.1	52.9
81.1	83.4	90.5	56.4	60.7	68.8
87.0	86.9	93.0	63.5	65.4	77.1
96.1	97.0	98.4	89.7	85.7	95.1
99.9	99.6	98.9	98.9	97.9	97.7
100.0	100.0	100.0	100.0	100.0	100.0
15.9	15.3	14.6	18.4	18.6	17.6

Women who had ever smoked daily					
First tried a cigarette			Began smoking daily		
African American	Hispanic	White	African American	Hispanic	White
5.9	6.9	8.9	1.6	0.7	1.6
20.1	25.4	37.8	6.7	7.6	10.3
38.6	48.7	66.1	15.5	21.1	30.7
66.8	68.6	85.9	41.8	35.4	58.3
77.2	78.2	92.0	57.0	53.4	75.0
81.4	80.8	94.4	62.9	58.0	80.8
96.0	94.5	99.2	88.4	81.8	95.6
99.6	99.2	99.9	97.2	96.4	99.2
100.0	100.0	100.0	100.0	100.0	100.0
16.6	16.2	14.6	18.9	19.5	17.1

Source: Substance Abuse and Mental Health Services Administration, public use data tapes, 1994–1995.

groups also suggest that smoking by African American adolescents may be a sign of disrespect toward parents (USDHHS 1994). Additionally, African American adolescent females appear to perceive that abstinence from smoking enhances their image, whereas white girls are more likely to perceive that smoking empowers them (perhaps because of themes expressed in cigarette advertising) (Mermelstein et al. 1996). The responses of African American community leaders, including that of former USDHHS Secretary Louis Sullivan, against cigarette marketing campaigns that appear to target African Americans may have influenced young people's attitudes and behaviors about smoking (McIntosh 1995).

Further research is needed to better understand the large decreases in smoking prevalence that occurred among African American youth in the 1970s and 1980s. Research is also needed to better

Table 12. Percentage of African American and white high school seniors who reported previous-month and heavy* smoking, by selected variables, Monitoring the Future surveys, United States, 1976–1994

	Previous-month smoking (%)							
	1976–1979		1980–1984		1985–1989		1990–1994	
Characteristic	African Americans	Whites	African Americans	Whites	African Americans	Whites	African Americans	Whites
Parental education								
Less than high school	34.0	42.0	23.2	36.8	13.9	37.6	11.8	37.6
High school	35.3	39.5	21.2	34.1	14.1	34.8	10.7	34.8
Some college	30.9	35.0	20.7	29.2	16.0	31.3	9.4	32.5
College	29.4	32.4	18.3	26.7	13.3	29.1	9.3	32.4
Some postgraduate study	30.1	31.2	21.9	23.7	14.7	28.3	9.8	31.7
Personal income†								
Low	NA	NA	16.4	24.5	12.6	24.6	7.5	24.6
Medium	NA	NA	19.4	30.5	14.9	28.8	9.4	29.7
High	NA	NA	22.8	33.3	14.1	34.5	9.8	35.5
Very high	NA	NA	23.4	37.8	16.5	39.8	12.4	41.3
School performance								
Far above average	25.9	25.8	16.2	21.0	11.4	23.0	8.0	24.6
Slightly above average	31.2	35.8	20.2	29.6	12.7	30.7	8.4	32.2
Average	34.4	45.3	22.5	38.5	15.3	38.9	10.6	39.4
Below average	40.0	52.4	28.0	44.1	20.5	46.7	17.6	48.3
Importance of religion								
Very important	29.3	25.0	19.1	21.9	11.4	21.9	8.2	22.1
Important	34.1	38.9	23.4	32.4	16.7	32.0	11.5	33.7
Not/somewhat important	40.0	43.0	23.5	35.2	18.3	36.8	12.4	38.5
Region								
Northeast	37.1	40.4	25.7	33.5	18.1	34.9	10.9	34.9
North Central	34.8	38.9	20.3	32.8	16.0	34.6	10.1	35.5
South	32.6	37.7	20.6	31.7	12.7	31.1	10.1	33.6
West	29.1	25.8	20.2	21.3	17.8	26.0	8.0	26.6
Locale in which respondent grew up								
Farm	33.6	37.9	24.9	31.6	26.7	33.0	22.3	31.9
Country	35.5	38.3	23.3	30.7	14.6	33.1	12.2	32.2
Small city	28.5	37.4	20.0	30.1	14.1	31.1	12.1	32.6
Medium-sized city	31.5	37.4	20.1	31.2	14.5	32.3	8.7	34.7
Suburb of medium-sized city	34.5	36.9	18.5	32.0	16.5	32.0	6.8	34.7
Large or very large city	36.2	38.5	22.3	32.0	13.9	33.4	8.5	33.6
Suburb of large or very large city	34.1	32.7	20.0	29.1	14.0	30.2	9.0	33.8

*Heavy cigarette smoking is 10 or more cigarettes smoked per day reported at time of survey.
†Personal income is the sum of income from employment, allowance, and other sources. Trend data are available for 1982–1994 only.
NA = data not available.

Heavy cigarette smoking (%)							
1976–1979		1980–1984		1985–1989		1990–1994	
African Americans	Whites	African Americans	Whites	African Americans	Whites	African Americans	Whites
9.3	24.0	6.2	21.5	3.0	21.3	2.7	19.1
10.8	21.6	4.6	17.4	2.4	15.7	1.6	15.9
9.1	17.4	4.8	13.1	3.3	12.3	1.4	12.6
7.2	14.9	3.5	10.3	2.4	9.5	1.6	11.6
9.1	14.8	5.3	9.0	4.1	8.3	1.2	9.8
NA	NA	3.1	10.1	2.2	8.7	1.1	8.0
NA	NA	3.4	12.5	3.0	9.2	1.7	9.1
NA	NA	6.1	16.3	2.4	14.2	1.2	13.5
NA	NA	6.9	20.7	3.3	19.8	2.3	20.1
7.6	10.6	3.7	8.1	3.0	7.1	1.5	7.1
8.4	17.7	4.1	12.8	2.0	11.2	1.2	11.3
10.2	25.9	5.2	20.2	2.7	17.5	1.5	17.3
11.7	33.5	7.2	26.1	5.1	25.4	4.4	26.0
8.5	10.4	4.0	8.7	2.1	7.3	1.2	7.5
9.4	19.1	5.7	14.5	3.1	12.0	1.9	11.9
12.8	25.0	6.0	18.6	3.9	16.3	2.4	16.5
12.2	23.2	6.3	17.4	4.7	16.6	2.1	14.4
11.1	19.3	5.3	16.0	3.0	13.8	1.9	13.9
9.2	19.5	4.7	14.8	2.1	12.4	1.6	13.8
7.4	12.5	4.2	7.9	3.3	8.4	1.1	8.8
9.9	16.4	5.4	12.3	8.1	12.2	5.1	12.2
10.0	20.2	5.1	14.9	2.9	13.7	1.5	13.1
8.7	19.0	4.5	13.7	2.7	12.2	2.8	12.5
9.4	20.2	4.9	15.4	2.2	13.1	1.3	13.4
9.0	20.6	4.0	15.2	2.8	12.6	1.1	12.7
10.8	22.9	5.4	16.5	2.3	14.9	1.2	14.0
9.3	16.4	3.8	14.0	3.7	11.0	1.2	12.2

Source: Institute for Social Research, University of Michigan, public use data tapes, 1976–1994.

understand the reasons for the increase in prevalence that occurred in the early 1990s (Figures 2 and 3) (CDC 1996).

Other risk behaviors. The Surgeon General's report *Preventing Tobacco Use Among Young People* (USDHHS 1994) has concluded that "Tobacco use in adolescence is associated with a range of health-compromising behaviors, including being involved in fights, carrying weapons, engaging in higher-risk sexual behavior, and using alcohol and other drugs" (p. 9). Escobedo and colleagues (1997) have observed these associations for African American adolescent males and females. Using data from the YRBS supplement of the 1992 NHIS, the researchers found that after their analysis controlled statistically for age, ethnicity, sex, parental educational level, region of the country, and other risk behaviors, marijuana use, binge drinking, and physical fighting were significantly associated with cigarette smoking among African American adolescent males and females. Focus group data suggest that African American youths are more likely than white youths to pair cigarette smoking with marijuana use as a way to maintain and enhance the drug effects of each (Mermelstein et al. 1996).

Smokeless Tobacco Use

The prevalence of smokeless tobacco use among African American adolescents has remained fairly constant in recent years. According to the MTF surveys, previous-month smokeless tobacco use (based on two-year rolling averages) was reported by 1.8 percent of eighth-grade African American students in 1992 and 2.2 percent in 1996; among tenth-grade students, the prevalence was 2.9 percent in 1992 and 2.5 percent in 1996; and among high school seniors, the prevalence was 2.1 percent in 1987 and 2.7 percent in 1996 (Johnston et al. 1996; Institute for Social Research, University of Michigan, unpublished data from the 1996 MTF surveys). Similarly, the YRBS data indicate that 2.1 percent of African American high school students were current smokeless tobacco users in 1991 (USDHHS 1994), and 2.2 percent were so in 1995 (CDC 1996).

African American adolescent males are substantially less likely than white adolescent males to use smokeless tobacco. Among male high school students participating in the 1995 YRBS, for example, 3.5 percent of African Americans and 25.1 percent of whites reported that they had used smokeless tobacco in the previous month (CDC 1996). Among females, 1.1 percent of African Americans and 2.5 percent of whites reported they had used smokeless tobacco in the previous month.

American Indians and Alaska Natives

Data assessing long-term trends in tobacco use among American Indians and Alaska Natives have been unavailable, for the most part, because national surveys and databases have only recently begun to identify persons of American Indian or Alaska Native ancestry. Studies using data from regional surveys or data on specific American Indian tribes have, however, provided useful information about tobacco use among members of these groups. Because the geographic location of American Indian and Alaska Native people reflects unique cultural and historical experiences, researchers should consider these differences when interpreting region-specific data about smoking prevalence. Data from regional studies also may provide information that is useful in developing culturally appropriate tobacco control efforts.

National surveys provide limited capability to assess the level of tobacco use and the effectiveness of tobacco control efforts among American Indians and Alaska Natives. The NHIS, for example, did not begin identifying American Indian and Alaska Native respondents until 1978. Because American Indians and Alaska Natives make up a small proportion of the U.S. population, data must be aggregated from several years to provide meaningful estimates.

Also noteworthy is that the data on tobacco use among American Indians and Alaska Natives include some ceremonial use (e.g., in pipes) in addition to daily addictive behavior (see Chapter 4). Anecdotal information also suggests that standard definitions and classifications of smoking may not accurately reflect smoking habits among American Indians, some of whom may smoke no more than one or two cigarettes per day (Nathaniel Cobb, personal communication, 1994; Roscoe et al. 1995). Yet American Indians who smoke a few cigarettes every day are classified in the <15-cigarettes-per-day category, which may imply a higher overall consumption than actually exists. Such differences in amounts of daily smoking may have important implications for the design of culturally appropriate smoking cessation interventions targeting American Indians.

Prevalence of Cigarette Smoking

Among American Indian and Alaska Native men and women, rates of smoking have been substantially higher than smoking rates in any other U.S. subgroup. In the 1987 Survey of American Indians and Alaska Natives (SAIAN) of the National Medical Expenditure Survey, 32.8 percent of respondents reported being

current smokers (Lefkowitz and Underwood 1991). This survey—the only nationally representative sample designed to assess the health practices of people of American Indian and Alaska Native ancestry—targets people who live on or near reservations and who are eligible for services provided by the Indian Health Service (IHS). The NHIS rate of smoking among American Indians and Alaska Natives for 1987 and 1988 (39.2 percent) was greater than the SAIAN estimate, perhaps because of different modes of administration and sampling (tribally enrolled beneficiaries in the SAIAN and the general population of American Indians and Alaska Natives in the NHIS).

In a more recent survey—conducted on reservations between 1989 and 1992 and involving 4,549 American Indians 45–74 years old in 13 tribes in Arizona, North Dakota, South Dakota, and southeastern Oklahoma—the prevalence of cigarette smoking was higher in nearly all American Indian groups (40.5 percent for men and 29.3 percent for women) than in the general U.S. population, but wide variation was notable (Welty et al. 1995). In this study, known as the Strong Heart Study, the smoking prevalence was highest in North Dakota and South Dakota (53.1 percent for men and 45.3 percent for women) and lowest in Arizona (29.7 percent for men and 12.9 percent for women).

According to the NHIS data, the overall prevalence of cigarette smoking among American Indians and Alaska Natives was 48.2 percent in 1978–1980 and 39.2 percent in 1994–1995. Although the data are imprecise, they suggest a substantial drop in prevalence for men from 1978–1980 to 1983–1985 (Table 13) (NCHS, public use data tapes, 1978–1995). However, no progress for men was observed from 1983–1985 to 1994–1995 and, for women, no progress was observed from 1978–1980 to 1994–1995.

Another major source of data on smoking patterns among American Indians and Alaska Natives is the BRFSS, which, for these analyses, included data collected in 47 states and the District of Columbia (CDC 1992a). The BRFSS data for 1987–1991 show that among American Indians and Alaska Natives, 33.4 percent of men and 26.6 percent of women reported that they were current smokers. The 95 percent confidence intervals associated with smoking rates overlap between American Indian and Alaska Native women and men in both surveys. Even though data were aggregated for several years, the small sample sizes of American Indians and Alaska Natives in both surveys produced imprecise estimates that make it impossible to determine whether the prevalence of smoking actually differed between men and women.

The prevalence of smoking among American Indian and Alaska Native women in the NHIS (35.2 percent in 1987–1988 and 37.2 percent in 1990–1991) differed substantially from the prevalence found in the 1987–1991 BRFSS (26.6 percent). Similarly, the prevalence of smoking among American Indian and Alaska Native men in the NHIS (43.5 percent in 1987–1988 and 32.9 percent in 1990–1991) differed appreciably from the prevalence found for men in the 1987–1991 BRFSS (33.4 percent). Methodological differences between the surveys may explain these differences. Household, face-to-face interviews were conducted for the NHIS, whereas telephone interviews were performed for the BRFSS (Goldberg et al. 1991; Sugarman et al. 1992; Leonard et al. 1993). Because telephone coverage in the areas where American Indians and Alaska Natives live tends to be lower than in areas where other ethnic groups live (Goldberg et al. 1991; Sugarman et al. 1992), sometimes as low as 60.4 percent of households (U.S. Bureau of the Census 1994), American Indians and Alaska Natives probably were less likely than others to have been included in the BRFSS surveys. Moreover, because telephone service requires financial ability to pay, persons of higher socioeconomic status may have been more likely than other persons to be included in the BRFSS surveys (Thornberry and Massey 1988). Thus, the BRFSS may have yielded lower smoking rates than the NHIS because the BRFSS surveys selected more affluent respondents, who were less likely than others to smoke.

Estimated rates and trends in cigarette smoking were not significantly related to educational attainment, according to NHIS (Table 13) and SAIAN data. However, both surveys suffered from imprecision because of small sample sizes.

Number of Cigarettes Smoked Daily

NHIS data for 1978–1995 show few variations over time in the number of cigarettes smoked per day among American Indian and Alaska Native smokers (Table 14) (NCHS, public use data tapes, 1978–1995). In the years 1978–1980, 39.9 percent of American Indian and Alaska Native smokers reported smoking fewer than 15 cigarettes per day, and 25.2 percent reported smoking 25 or more cigarettes per day. By 1994–1995, the proportion of American Indian and Alaska Native smokers who smoked fewer than 15 cigarettes per day was 49.9 percent, whereas the proportion who smoked 25 or more cigarettes per day was 17.0 percent. Data from the Strong Heart Study showed that American Indian smokers reported smoking fewer cigarettes per day (range of 6.1 among women in Arizona to 15.0 among men in North Dakota and South Dakota) than the national average (Welty et al. 1995).

Table 13. Percentage of American Indian and Alaska Native adults who reported being current cigarette smokers,* overall and by gender, age, and education, National Health Interview Surveys, United States, 1978–1995 aggregate data

	1978–1980†		1983–1985†		1987–1988†		1990–1991†		1992–1993†		1994–1995†	
Characteristic	%	±CI‡	%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
Total	48.2	5.8	35.6	8.0	39.2	5.9	35.0	6.9	39.1	5.1	39.2	7.3
Gender												
Men	63.0	11.0	41.4	12.9	43.5	9.3	32.9	7.1	37.5	9.3	45.4	13.1
Women	34.1	10.1	32.3	8.8	35.2	6.2	37.2	9.1	40.3	8.6	34.2	8.7
Age (years)												
18–34	53.3	9.2	39.9	13.6	38.1	7.1	36.1	9.3	41.3	8.7	48.0	11.1
35–54	53.5	11.0	36.7	12.1	47.4	8.0	40.2	7.0	45.1	8.4	42.9	11.3
≥55	33.4	15.1	24.7	11.3	29.2	10.7	23.4	14.9	22.3	9.3	10.5	8.9
Education§												
Less than high school	49.9	8.8	28.7	11.3	42.5	8.3	33.4	8.9	42.6	12.3	44.1	14.2
High school graduate/ any college	35.0	11.5	36.7	10.2	35.7	6.7	35.4	7.9	37.9	7.4	33.5	7.8

*Excludes American Indians and Alaska Natives who indicated they were of Hispanic origin. For 1978–1991, current cigarette smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked. For 1992–1995, current smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked every day or on some days.

†1978, 1979, and 1980 data were combined; 1983 and 1985 data were combined; 1987 and 1988 data were combined; 1990 and 1991 data were combined; 1992 and 1993 data were combined; and 1994 and 1995 data were combined.

‡95% confidence interval.

§Includes persons aged 25 years and older.

Source: National Center for Health Statistics, public use data tapes, 1978–1995.

In the years 1978–1980, American Indian and Alaska Native men were more likely than women to smoke 25 or more cigarettes per day (Table 14). Since 1980, however, the proportion of men smoking 25 or more cigarettes per day has declined.

Cigarette consumption data from the BRFSS and the NHIS cannot be compared directly because the BRFSS data are for the mean number of cigarettes smoked daily (CDC 1992a). However, both sources of data indicate that the number of cigarettes smoked is slightly greater among older than among younger American Indians and Alaska Natives.

Quitting Behavior

State and regional surveys also indicate that the prevalence of smoking cessation remains relatively low among American Indian and Alaska Native smokers compared with smokers in other racial/ethnic groups (Goldberg et al. 1991; Lando et al. 1992). In the past 17 years, the percentage of American Indians and Alaska Natives who have ever smoked 100 cigarettes and have quit smoking has changed only slightly overall; NHIS data indicate that the prevalence of cessation was 31.6 percent in 1978–1980 and 32.9 percent in 1994–1995 (Table 15) (NCHS, public use data tapes, 1978–1993). During this period, the prevalence of smoking cessation fluctuated substantially for both genders, with similar estimates reported for 1978–1980 and 1994–1995. The prevalence of smoking cessation among American Indians and Alaska Natives has increased with increasing age: those aged 18–34 years have had the lowest prevalence of cessation, those aged 35–54 years have had intermediate proportions, and those aged 55 years and older have had the highest prevalence of cessation. The prevalence of cessation increased among older American Indians and Alaska Natives; however, no progress occurred among those

Table 14. Percentage of adult American Indian and Alaska Native smokers* who reported smoking <15, 15–24, or ≥25 cigarettes per day, overall and by gender, age, and education, National Health Interview Surveys, United States, 1978–1995 aggregate data

Characteristic	1978–1980†		1983–1985†		1987–1988†		1990–1991†		1992–1993†		1994–1995†	
	%	±CI‡	%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
Total												
<15 cigarettes	39.9	10.2	38.2	12.5	33.7	7.5	46.3	7.3	50.0	11.9	49.9	14.6
15–24 cigarettes	34.9	9.5	48.5	12.5	45.8	7.6	34.7	8.2	32.6	9.3	33.0	12.7
≥25 cigarettes	25.2	9.2	13.3	9.6	20.6	5.3	19.1	6.7	17.4	8.8	17.0	8.3
Gender												
Men												
<15 cigarettes	35.8	12.7	22.7	15.2	20.9	10.4	35.5	10.2	38.7	15.9	36.2	28.1
15–24 cigarettes	31.8	12.7	63.6	17.8	53.8	11.6	44.9	14.9	39.8	15.6	42.1	23.1
≥25 cigarettes	32.3	14.8	13.7	12.1	25.4	8.7	19.7	10.6	21.5	12.0	21.7	15.7
Women												
<15 cigarettes	47.1	16.9	48.9	14.6	48.3	11.2	56.2	9.5	58.9	14.7	64.9	12.3
15–24 cigarettes	40.3	17.4	38.1	12.7	36.6	12.2	25.3	7.3	27.0	11.0	23.1	11.2
≥25 cigarettes	12.7	11.2	13.0	12.2	15.1	5.6	18.5	7.8	14.1	11.8	12.0	6.4
Age (years)												
18–34												
<15 cigarettes	42.0	15.7	45.0	18.7	51.8	15.1	59.5	12.7	49.9	16.7	57.6	18.9
15–24 cigarettes	41.0	11.7	49.1	18.1	40.8	13.3	29.7	11.7	35.0	14.3	29.7	17.0
≥25 cigarettes	17.0	11.2	5.9	7.1	7.4	5.7	10.8	5.3	15.1	14.4	12.6	10.4
35–54												
<15 cigarettes	26.9	15.7	26.6	17.2	21.3	9.9	37.3	10.2	46.1	19.1	43.3	17.2
15–24 cigarettes	34.3	15.2	52.1	21.2	40.4	12.9	39.6	10.8	31.1	15.7	32.3	16.1
≥25 cigarettes	38.8	19.5	21.3	19.1	38.3	14.9	23.2	10.9	22.9	12.4	24.3	14.6
≥55												
<15 cigarettes	60.5	23.6	41.3	29.4	20.9	19.3	30.8	12.9	66.1	24.3	14.6	22.4
15–24 cigarettes	19.7	19.6	38.3	31.2	70.0	22.8	35.7	22.9	29.4	24.0	75.5	30.2
≥25 cigarettes	19.8	19.9	20.4	33.3	9.2	9.8	33.5	30.2	4.4	6.3	9.9	19.8
Education§												
Less than high school												
<15 cigarettes	38.0	13.7	30.2	18.1	19.8	12.7	33.2	14.8	45.0	23.9	37.4	21.7
15–24 cigarettes	38.6	13.9	52.7	20.6	51.1	14.1	39.4	18.6	30.9	17.5	40.1	21.1
≥25 cigarettes	23.4	13.1	17.1	20.3	29.1	10.5	27.4	14.1	24.1	22.0	22.5	17.2
High school/any college												
<15 cigarettes	37.8	17.7	36.9	16.4	31.3	11.6	45.6	9.1	47.5	13.5	57.0	16.3
15–24 cigarettes	27.8	18.9	48.5	17.4	47.9	11.7	33.4	9.7	33.7	12.2	25.8	13.4
≥25 cigarettes	34.4	19.1	14.6	13.4	20.8	8.8	21.0	8.7	18.8	9.7	17.2	11.9

*Excludes American Indians and Alaska Natives who indicated they were of Hispanic origin. For 1978–1991, current cigarette smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked. For 1992–1995, current smokers include persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked every day or on some days.

†1978, 1979, and 1980 data were combined; 1983 and 1985 data were combined; 1987 and 1988 data were combined; 1990 and 1991 data were combined; 1992 and 1993 data were combined; and 1994 and 1995 data were combined.

‡95% confidence interval.

§Includes persons aged 25 years and older.

Source: National Center for Health Statistics, public use data tapes, 1978–1995.

Table 15. Percentage of adult American Indian and Alaska Native ever smokers who have quit,* overall and by gender, age, and education, National Health Interview Surveys, United States, 1978–1995 aggregate data

Characteristic	1978–1980†		1983–1985†		1987–1988†		1990–1991†		1992–1993†		1994–1995†	
	%	±CI‡	%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
Total	31.6	7.9	37.7	9.3	36.1	7.5	38.2	8.2	34.6	9.1	32.9	9.6
Gender												
Men	28.5	11.8	38.2	12.9	37.5	9.5	44.0	9.7	43.8	15.3	28.3	13.9
Women	36.5	11.8	37.4	12.8	34.3	8.4	31.7	9.8	25.2	7.7	37.2	13.0
Age (years)												
18–34	29.5	12.0	30.2	15.1	28.0	8.2	28.3	10.1	20.7	13.4	16.3	13.3
35–54	25.4	12.1	38.0	15.2	34.7	9.5	33.0	8.6	34.8	10.5	29.1	13.4
≥55	44.8	18.4	54.1	17.5	50.9	17.3	63.5	19.5	61.7	15.4	81.7	14.8
Education§												
Less than high school	28.4	11.3	43.8	15.7	29.8	12.4	49.4	11.7	37.4	13.1	39.3	15.1
High school/any college	47.3	15.6	39.1	13.3	43.1	9.1	36.0	10.3	36.2	12.3	36.5	11.0

*Excludes American Indians and Alaska Natives who indicated they were of Hispanic origin. The prevalence of cessation is the percentage of ever smokers who are former smokers. Former smokers are persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they were not smoking, and ever smokers include current and former smokers.

†1978, 1979, and 1980 data were combined; 1983 and 1985 data were combined; 1987 and 1988 data were combined; 1990 and 1991 data were combined; 1992 and 1993 data were combined; and 1994 and 1995 data were combined.

‡95% confidence interval.

§Includes persons aged 25 years and older.

Source: National Center for Health Statistics, public use data tapes, 1978–1995.

aged 18–54 years. Interviews with patients at urban IHS clinics in Milwaukee, Minneapolis, Seattle, and Spokane also showed a low prevalence of cessation (29.7 percent) (Lando et al. 1992), compared with 45 percent reported for the total U.S. population during the same time.

Data from the NCI Supplement of the 1992–1993 CPS indicate that among American Indians and Alaska Natives aged 18 years and older who were daily smokers one year before being surveyed, 62.8 percent reported that they were still smoking daily and that they had not tried quitting for at least one day during the previous year (Table 4). Another 28.9 percent had tried quitting for at least one day, 3.7 percent were occasional smokers (i.e., smoked only on some days), 1.8 percent had not smoked for the past 1–90 days, and 2.8 percent had not smoked for the past 91–364 days. This distribution was similar to that among whites.

Women of Reproductive Age

Since 1978, rates of smoking have remained strikingly high among American Indian and Alaska Native women of reproductive age (18–44 years) participating in the NHIS (Table 16) (NCHS, public use data tapes, 1978–1995). Between 1978 and 1995, the prevalence of cigarette smoking among reproductive-aged American Indian and Alaska Native women changed little overall, and the data are not precise enough to allow meaningful comparisons according to educational attainment.

A recent study by Davis and colleagues (1992) confirms that the prevalence of smoking is higher among American Indian women of reproductive age than among their counterparts in other racial/ethnic groups. The investigators analyzed birth certificates issued in Washington state between January 1,

Table 16. Percentage of American Indian and Alaska Native women of reproductive age who reported being current cigarette smokers,* overall and by education, National Health Interview Surveys, United States, 1978–1995 aggregate data

Characteristic	1978–1980†		1983–1985†		1987–1988†		1990–1991†		1992–1993†		1994–1995†	
	%	±CI‡	%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
Total	40.2	12.8	35.9	11.3	39.2	8.9	43.3	11.1	39.7	9.4	44.3	12.0
Education§												
Less than high school	60.4	23.7	47.6	24.9	53.1	18.9	61.3	14.5	82.1	18.6	62.4	30.0
High school/any college	17.2	13.1	27.6	11.7	30.5	9.3	42.9	14.4	32.7	11.2	45.6	14.4

*Excludes American Indians and Alaska Natives who indicated they were of Hispanic origin. For 1978–1991, current cigarette smokers include women aged 18–44 years who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked. For 1992–1995, current smokers include women aged 18–44 years who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked every day or on some days.

†1978, 1979, and 1980 data were combined; 1983 and 1985 data were combined; 1987 and 1988 data were combined; 1990 and 1991 data were combined; 1992 and 1993 data were combined; and 1994 and 1995 data were combined.

‡95% confidence interval.

§Includes persons aged 25 years and older.

Source: National Center for Health Statistics, public use data tapes, 1978–1995.

1984, and December 31, 1988, and found that the prevalence of smoking among American Indian mothers, adjusted for maternal age and marital status, was 1.3 times higher than the prevalence among white mothers.

Data from the 1988 NMIHS indicate that 35 percent of American Indian mothers sampled reported smoking cigarettes in the 12 months before delivery (Sugarman et al. 1994). Recent birth certificate data from U.S. final natality statistics show that 20.9 percent of American Indian and Alaska Native mothers smoked during pregnancy (Ventura et al. 1997), a slight decline from 23.0 percent in 1989 (Table 6). The prevalence of smoking among American Indian mothers was higher than all groups in 1989–1995 (Table 6).

Young People

Cigarette Smoking

One of the few studies focusing on tobacco use among American Indian and Alaska Native youths is the MTF, which includes a series of surveys of high school seniors. Between 1976 and 1994, American Indian and Alaska Native high school seniors had higher rates of cigarette smoking than all of their counterparts, although the rate of decline was more rapid than for whites (Table 7). The prevalence of previous-month cigarette smoking during 1990–1994 was 39.4 percent among American Indian and Alaska Native females and 41.1 percent among males. During 1985–1989, rates of daily smoking and of smoking one-half pack or more per day were higher among American Indian and Alaska Native youths than among youths of other racial/ethnic groups (Bachman et al. 1991a).

Data from a revised version of the Adolescent Health Survey showed that for every grade level after the seventh, American Indian and Alaska Native females were somewhat more likely to be daily cigarette smokers than were American Indian males. The prevalence of daily cigarette smoking among females increased from 8.9 percent in junior high school to 17.8 percent in high school, whereas among males the prevalence of daily cigarette smoking increased from 8.1 percent in junior high school to 15.0 percent in high school (Blum et al. 1992).

Smokeless Tobacco Use

The use of smokeless tobacco is also high among American Indian and Alaska Native youths. Bruerd (1990) reviewed nine studies of schoolchildren's use of smokeless tobacco in South Dakota, Montana,

Nebraska, Washington, Arizona, New Mexico, and Alaska and found that the prevalence of regular smokeless tobacco use ranged from 18 percent among students in kindergarten through the sixth grade to 55.9 percent among students in the ninth and tenth grades. The percentage of schoolchildren who reported ever using or experimenting with smokeless tobacco ranged from 29 to 82 percent. In general, the findings suggested a young age at onset of smokeless tobacco use, similar prevalence of use among adolescent boys and girls, and higher overall prevalence of use among American Indian and Alaska Native schoolchildren than among students in other populations. A 1987–1988 survey of 650 American Indian and Alaska Native youths at three IHS sites (Alaska; the Billings region, which encompasses Montana and Wyoming; and the Navajo region, which encompasses portions of Arizona, Colorado, New Mexico, and Utah) indicated that these youths were experimenting with and regularly using smokeless tobacco at higher rates than white youths (Backinger et al. 1993).

Regional and Tribal Tobacco Use

Cigarette Smoking

Although a high rate of smoking has been estimated nationally for American Indians and Alaska Natives, regional and state differences in tobacco-use patterns are evident when 1988–1992 aggregate data from the BRFSS are considered. High smoking prevalences were found in Alaska (45.1 percent), the Northern Plains (Montana, Nebraska, North Dakota, and South Dakota) (44.2 percent), and the Northern Woodlands (Iowa, Michigan, Minnesota, and Wisconsin) (35.6 percent), whereas much lower overall smoking prevalences were found in California (25.4 percent) and the Southwest (Arizona, Colorado, New Mexico, and Utah) (17.0 percent) (Table 17) (CDC, public use data tapes, 1988–1992). The prevalence of current cigarette smoking varied by geographic region more than twofold for men and nearly threefold for women. For example, 21.3 percent of men and 13.5 percent of women in the Southwest reported that they currently

Table 17. Percentage of American Indian and Alaska Native adults who reported being current cigarette smokers,* overall and by region/state, gender, age, and education, Behavioral Risk Factor Surveillance System, 1988–1992 aggregate data

	Alaska		California		Northern Plains†		Northern Woodlands†	
Characteristic	%	±CI‡	%	±CI	%	±CI	%	±CI
Total	45.1	5.9	25.4	7.0	44.2	7.8	35.6	4.8
Gender								
Men	48.4	8.7	27.9	10.5	49.1	11.3	33.0	7.6
Women	41.7	8.0	22.7	8.9	38.4	9.9	37.6	6.2
Age (years)								
18–34	48.5	9.0	20.9	8.7	51.2	12.4	33.4	6.7
35–54	41.5	8.6	34.4	13.4	47.2	12.4	45.4	9.0
≥55	41.3	14.6	24.0	20.6	27.3	15.1	27.0	9.1
Education§								
Less than high school	43.1	11.2	25.8	15.3	44.5	14.8	40.6	11.0
High school/any college	44.9	7.3	32.5	9.7	40.1	9.8	35.3	5.7

*Current cigarette smokers are persons aged 18 years and older who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked.
†The Northern Plains region includes Montana, Nebraska, North Dakota, and South Dakota; the Northern Woodlands region includes Iowa, Michigan, Minnesota, and Wisconsin; the Pacific Northwest region includes Idaho, Oregon, and Washington; the Southwest region includes Arizona, Colorado, New Mexico, and Utah; and "other" includes all remaining states not specified above that participated in the Behavioral Risk Factor Surveillance System during this period.

smoked, compared with 49.1 percent of men and 38.4 percent of women in the Northern Plains (Table 17).

The majority of American Indians and Alaska Natives (83.3 percent) responding to the BRFSS smoked 15 or fewer cigarettes per day; this finding was consistent across all states and regions (Table 18) (CDC, public use data tapes, 1988–1992). Overall, female American Indians and Alaska Natives smoked fewer cigarettes than their male counterparts—a finding that was consistent across all states and regions. American Indian smokers in the Northern Plains (13.5 percent) were the most likely to smoke 25 or more cigarettes per day. American Indian smokers in the Southwest (51.2 percent) and the Pacific Northwest (46.8 percent) had the highest prevalence of cessation, whereas American Indians in the Northern Plains (31.8 percent) and Alaska Natives (37.0 percent) had the lowest prevalence of cessation (Table 19) (CDC, public use data tapes, 1988–1992).

In similar analyses of the BRFSS data aggregated for 1985–1988, the prevalence of smoking varied markedly by gender and geographic region (Sugarman et al. 1992). For American Indian men, the prevalence of smoking was highest among those living in the Plains region (Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota, and Wisconsin) (48.4 percent), followed by those in the West Coast region (California, Idaho, and Washington) (25.2 percent) and the Southwest (Arizona, New Mexico, and Utah) (18.1 percent). Similarly, for American Indian women, the prevalence of smoking was highest among those living in the Plains region (57.3 percent), followed by those in the West Coast region (31.6 percent) and the Southwest (14.7 percent).

Regional and tribal data on cigarette smoking are also available from a probability sample of American Indians living on or near the northern Montana Blackfeet Reservation and those served by the Native American Center in Great Falls, Montana, in 1987 (Goldberg et al. 1991). Among Blackfeet Indians, 34 percent of men and 50 percent of women reported that they smoked cigarettes. Among American Indians in

Oklahoma		Pacific Northwest[†]		Southwest[†]		Other[†]		Total	
%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
30.4	7.3	33.1	6.0	17.0	4.6	28.9	4.2	29.2	2.5
36.2	12.7	35.4	9.2	21.3	8.2	36.5	6.4	34.4	4.0
26.0	8.9	31.2	7.9	13.5	5.0	21.3	5.2	24.2	3.1
33.5	12.6	37.6	9.6	13.3	5.6	30.2	6.8	28.9	3.8
35.0	12.8	30.3	8.4	18.9	8.8	33.6	7.1	33.8	4.4
21.7	10.6	26.2	14.7	29.8	14.2	18.6	6.6	22.5	5.3
25.1	14.4	42.5	15.4	29.7	12.3	34.0	9.4	33.4	5.6
31.2	8.7	33.9	7.3	15.1	5.9	29.4	5.0	30.5	3.2

[‡]95% confidence interval.
[§]Includes persons aged 25 years and older.
Source: Centers for Disease Control, public use data tapes, 1988–1992.

Table 18. Percentage of adult American Indian and Alaska Native smokers* who reported smoking <15, 15–24, or ≥25 cigarettes per day, overall and by region/state, gender, age, and education, Behavioral Risk Factor Surveillance System, 1988–1992 aggregate data

Characteristic	Alaska		California		Northern Plains†		Northern Woodlands†	
	%	±CI‡	%	±CI	%	±CI	%	±CI
Total								
<15 cigarettes	83.7	4.1	88.0	5.0	70.9	7.5	84.6	3.6
15–24 cigarettes	12.2	3.7	8.5	4.4	15.7	5.5	12.3	3.3
≥25 cigarettes	4.1	2.2	3.5	2.7	13.5	6.5	3.1	1.6
Gender								
Men								
<15 cigarettes	79.3	7.0	87.7	7.4	66.8	11.4	83.9	5.5
15–24 cigarettes	15.2	6.1	8.3	6.4	14.3	7.8	11.7	5.0
≥25 cigarettes	5.5	4.0	4.0	4.1	19.0	10.4	4.4	2.6
Women								
<15 cigarettes	88.2	4.2	88.2	6.8	75.8	8.8	85.2	4.6
15–24 cigarettes	9.0	3.9	8.8	5.9	17.3	7.7	12.7	4.3
≥25 cigarettes	2.7	1.9	3.0	3.5	6.9	5.4	2.1	2.0
Age (years)								
18–34								
<15 cigarettes	87.7	5.1	90.8	5.8	68.1	12.4	87.4	4.5
15–24 cigarettes	8.7	3.8	5.4	4.4	18.8	9.5	10.9	4.2
≥25 cigarettes	3.6	3.7	3.8	4.0	13.0	10.6	1.7	1.6
35–54								
<15 cigarettes	78.5	7.4	82.1	11.0	65.6	12.0	79.5	7.4
15–24 cigarettes	15.6	6.9	16.2	10.8	16.3	8.7	14.9	6.7
≥25 cigarettes	6.0	3.5	1.7	2.5	18.1	10.6	5.6	4.0
≥55								
<15 cigarettes	80.7	12.3	89.1	12.8	83.5	13.7	84.9	7.4
15–24 cigarettes	16.8	12.2	5.1	9.9	8.9	9.8	12.1	6.8
≥25 cigarettes	2.6	2.1	5.8	8.4	7.6	10.9	3.0	3.1
Education§								
Less than high school								
<15 cigarettes	85.0	7.7	90.6	9.9	66.3	14.8	81.7	7.3
15–24 cigarettes	12.0	7.6	5.1	5.8	13.3	10.5	14.9	6.7
≥25 cigarettes	3.0	2.0	4.4	8.3	20.4	13.5	3.4	3.1
High school/any college								
<15 cigarettes	78.2	6.2	83.1	7.7	74.1	8.9	84.2	4.6
15–24 cigarettes	15.8	5.3	13.2	7.2	16.3	7.4	12.0	4.1
≥25 cigarettes	6.1	4.0	3.7	3.2	9.6	6.3	3.9	2.4

*Current cigarette smokers are persons aged 18 years and older who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked.

†The Northern Plains region includes Montana, Nebraska, North Dakota, and South Dakota; the Northern Woodlands region includes Iowa, Michigan, Minnesota, and Wisconsin; the Pacific Northwest region includes Idaho, Oregon, and Washington; the Southwest region includes Arizona, Colorado, New Mexico, and Utah; and "other" includes all remaining states not specified above that participated in the Behavioral Risk Factor Surveillance System during this period.